

REMARKS

The Official Action (Final) of May 9, 2005, and the prior art relied upon therein have been carefully reviewed. The claims in the application as amended above are claims 1-6, 8, 10 and 12-20, and these claims define patentable subject matter warranting their allowance. Accordingly, applicants respectfully request entry of the above amendment¹, favorable reconsideration and allowance.

New dependent claims 18 to 20 correspond to certain original claims. These claims are patentable because they depend from patentable claim 17, and further add non-obvious features in the dependent portions thereof.

Submitted herewith are four Declarations under 37 CFR 1.132 executed by the inventors, supporting the patentability of the present invention, as will be further explained below. Entry and consideration of such Declarations are respectfully requested.

Claims 1-17 have been rejected under the second paragraph of §112. This rejection is respectfully traversed.

¹ Three claims are proposed to be deleted and three claims are proposed to be added, whereby entry of the present amendment will not add any additional claims. A substantial amount of the material added to claims 1 and 17 comes from claim 7, whereby this additional material would not raise any "new issues".

Claims 1 and 17 are proposed to be amended above to make clear that it is the valve that is additional, not that the "automatic valve" is a second automatic valve.

This is a cosmetic amendment made to improve the form of the claims. No limitations are added in this regard and none are intended. Withdrawal of the rejection is in order and is respectfully requested.

Amended claim 1 above is essentially a combination of previously amended claim 1 and original claim 7 regarding the additional feature that the automatic valve is an annular disk. For sake of clarity, applicants propose to add the additional features that the annular disk is received with an inward peripheral area in a coaxial annular groove, and that the annular disk is axially pre-loaded in the nature of a saucer spring. These features are disclosed in the specification at page 10, lines 16 to 19, and at page 11, lines 1 to 9, as well as at page 10, lines 27 to 29.

Applicants believe that these additional features clarify the functioning of the automatic valve in comparison to the prior art and do not constitute new subject matter.

The original claims 2 to 6 and 8 to 16 remain unchanged.

Original claim 7 is now a feature of amended claim 1 and therefore is cancelled.

The amendments in currently amended claim 17 correspond to those of currently amended claim 1.

Claims 1-3, 8, 10 and 12-16 have again been rejected under §103 as obvious from Mintgen. This rejection is respectfully traversed.

The Remarks previously filed are respectfully repeated by reference. Amended claims 1 and 17, proposed above, are non-obvious from Mintgen.

Mintgen discloses an adjustable-length compression spring with a controllable valve 20 for interconnecting the sectional casing chambers 13, 14, which can be operated by a valve pin 18. The controllable valve 20 is provided with an automatic valve, which is actuated by exceeding an excess pressure. The automatic valve is constructed as a ball valve comprising a valve element in the form of an excess pressure valve ball 26, which is disposed within an excess pressure flow chamber 23 and which is in contact with a pre-loaded excess pressure valve spring 27. An exit bore 28 of the excess pressure flow chamber 23 opens into the sectional casing chamber 13 and defines a valve seat 36 for the excess pressure valve ball 26. For providing the automatic valve with good sealing properties, either the valve seat 36 is softer than the valve ball 26 or conversely the valve ball 26 is softer than the valve seat 36.

In case the pressure in the casing chamber 13 exceeds an excess pressure limit, the automatic valve opens and provides a connection between the casing chambers 13, 14.

In comparison to Mintgen, the compression spring of the present invention has an automatic valve 41 with a valve element 41a in form of an annular disk, which is pre-loaded and which closes a circumferential groove 40. For this purpose the inner part of the annular disk 41a is received within an inward peripheral area in a coaxial annular groove 45 such that the disk 41a is slightly bent in its shut-off position.

In comparison to Mintgen, the automatic valve of the present invention has a simple and cost-efficient construction. The valve element 41a in the form of the annular disk simultaneously serves as spring element and seal element. Furthermore, the annular disk 41a is not disposed within a pressure flow chamber as disclosed in Mintgen, but outside of the controllable valve 20. By this construction, the automatic overflow connection 44 in the present invention is disposed within the piston 12 as disclosed. This leads to a simpler and more cost-efficient construction of the automatic valve 20.

Mintgen does not disclose a valve element in form of an annular disk. Thus, claims 1 and 17 are non-obvious from Mintgen.

For the sake of clarity, claim 1 amended above further comprises the feature that the annular disk is axially pre-loaded in the way of a saucer spring. This feature clarifies the fact that the annular disk is pre-loaded by itself. Furthermore, amended claims 1 and 17 contain the feature that the inward peripheral area of the annular disk is received in a coaxial groove. This feature clarifies as well that the annular disk is pre-loaded by itself in a shut-off position and not moveable for opening and closing the automatic valve.

Mintgen does not disclose a valve element in form of an annular disk which is received with an inward peripheral area in a coaxially designed groove and which is axially pre-loaded in the way of a saucer spring. Thus, amended claims 1 and 17 are non-obvious from Mintgen.

Amended claim 17 additionally contains the feature that the valve element 41a is a composite body with a substrate layer 42 that is at least unilaterally coated with a non-metal layer 43. In comparison to amended claim 1 the valve element 41a in the form of an annular disk is

additionally constructed as a composite body in order to improve the sealing properties of the annular disk.

Withdrawal of the rejection is in order and such is respectfully requested.

Claims 1-8, 10 and 12-17 have again been rejected under §103 as obvious from EP '972. This rejection is again respectfully traversed.

Amended claims 1 and 17 are non-obvious from EP '972 which discloses a compression spring with a controllable valve 11 for interconnecting the sectional casing chambers 4, 5 and an automatic overload valve 18. The automatic valve 18 comprises an annular sealing disk 21, which is axially movable and closes an automatic overflow connection 19. For closing the automatic overflow connection 19, the sealing disk 21 is pressed against the piston 10 by a spring element 20 which is disposed between the sealing disk 21 and a retaining ring 22. The retaining ring 22 is received in a groove. Thus, the valve element disclosed in EP '972 comprises at least three components, namely the annular sealing disk 21, the spring element 20 and the retaining ring 22.

In comparison thereto, the valve element 41a of the present invention is constructed in form of an annular disk which is pre-loaded by itself and which is received with an

inward peripheral area in a coaxial groove 45. Thus, the valve element 41a of the present invention simultaneously serves as all of annular disk, spring element and retaining ring. This results in a simpler and more cost-efficient construction of the automatic valve 41.

EP '972 does not contain any hint for a person skilled in the art how to integrate the components of the automatic valve disclosed in order to simplify the construction of the automatic valve. Thus, claim 1 and 17 are non-obvious from EP '972.

EP '972 also does not disclose a valve element 41a in form of an annular disk, which is constructed as a composite body and pre-loaded by itself, as called for in claim 17.

Withdrawal of the rejection is in order and is respectfully requested.

In both rejections based on §103, the PTO has more or less brushed aside certain features called for in the dependent portions of some of the dependent claims, including recitation of certain desirable forces, and in the cases of claims 5 and 6 the examiner has taken "official notice" that metal substrates and plastic rubber materials are well known in valve design. Applicants respectfully traverse the position of the examiner in these regards.

As regards those claims which recite certain forces, applicants respectfully submit that the PTO has no basis for assuming, without any evidence, that such selections involve a mere matter of routine experimentation. As regards claims 5 and 6 and the recited materials, these claims do not exist in a vacuum, but the materials exist in particular environment. Applicants cannot accept "official notice", and have the right to face and rebut any appropriate prior art which would allegedly make these claims, including the dependent portions thereof, obvious to the person of ordinary skill in the art at the time the present invention was made.

As indicated above, Declarations from each of the inventors are attached herewith. These Declarations are of course not attorney's arguments, and instead constitute evidence, and therefore must be given weight. These Declarations support applicants' arguments as to the non-obviousness of the present invention.

Applicant believes that all issues raised in the Office Action have been addressed above in a manner favoring patentability.

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Applicant respectfully requests entry of the
amendments presented above, favorable reconsideration and
allowance.

Respectfully submitted,

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